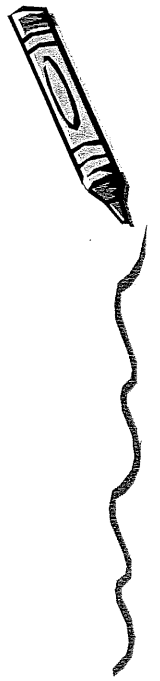
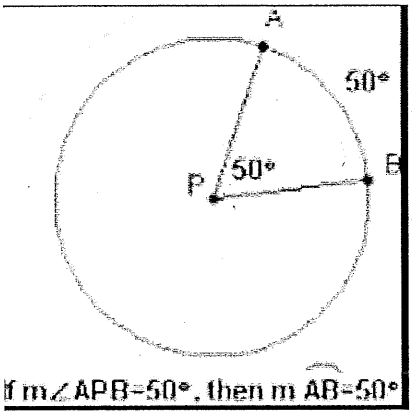
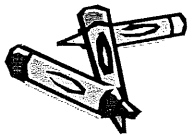
Section 6.4 Inscribed Angles and Polygons



(1)

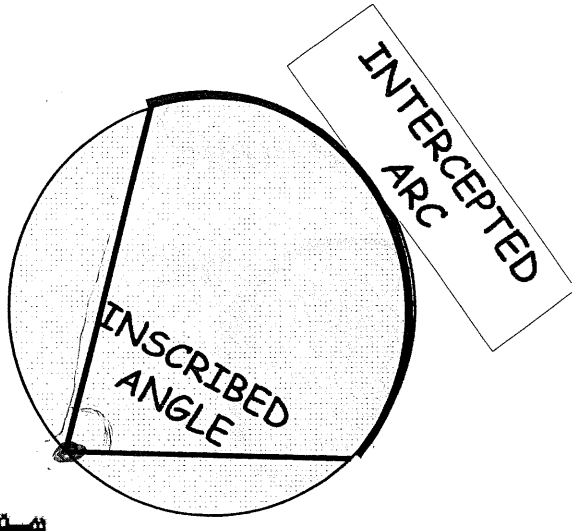
Central Angles are <u>congruent</u> to Arc Measures





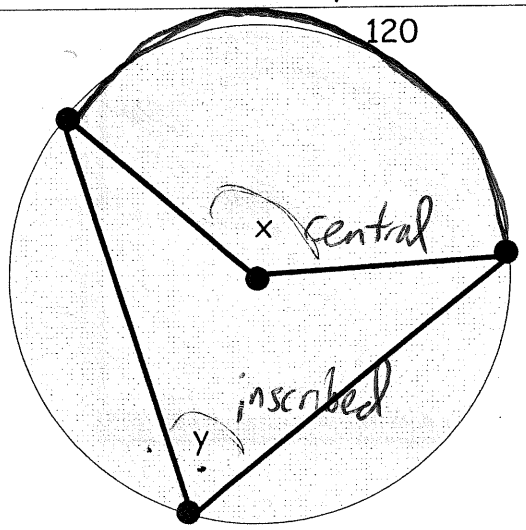
(2)

<u>Inscribed Angle</u>:
An angle whose **vertex** is on the circle and whose **sides are chords** of the circle



(3)

The measure of the inscribed angle is HALF the measure of the intercepted arc!!



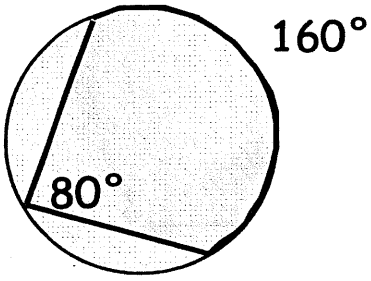
$x = 120°$

$y = 60°$

(4)

To find the measure of an inscribed angle...

$$Inscribed\ Angle = \frac{Intercepted\ Arc}{2}$$



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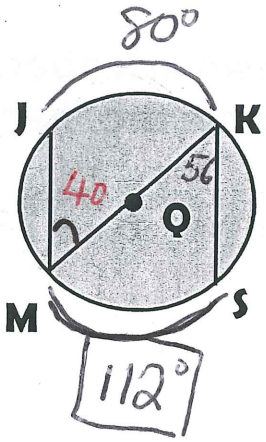
Examples

3. If $m\overset{\frown}{JK} = 80°$, find $m\angle JMK$.

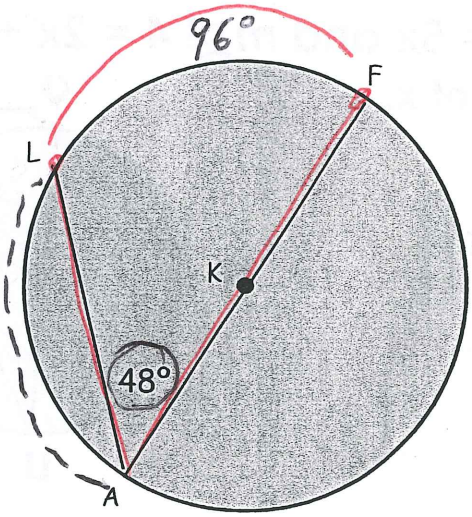
4. If $m\angle MKS = 56°$, find $m\overset{\frown}{MS}$.

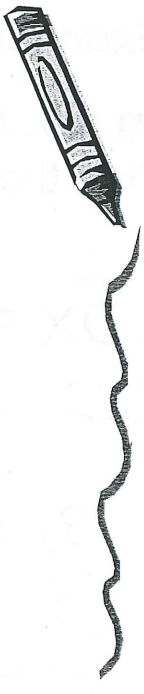


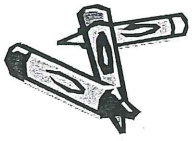
6 Find the measure of arc AL. (think about it!)

180 - 96

= 84°

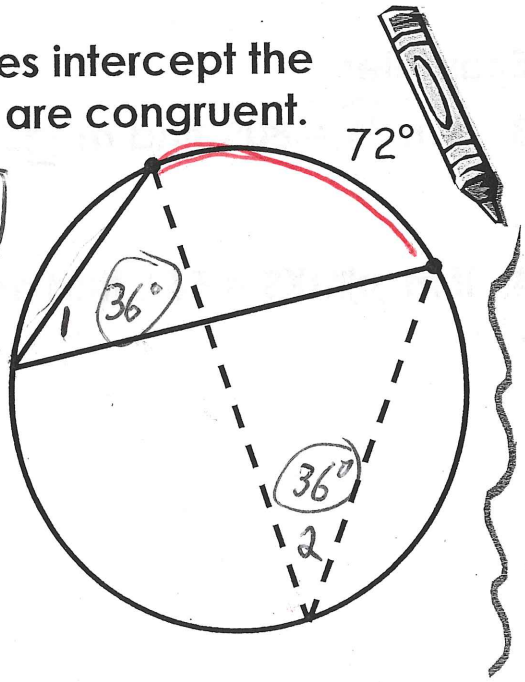


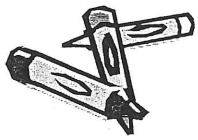




(7) **If two inscribed angles intercept the same arc, then they are congruent.**

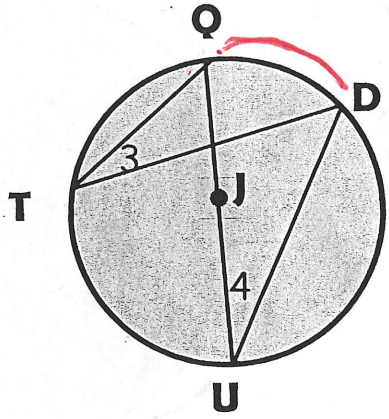
$m\angle 1 \cong m\angle 2 = 36°$





(8) **Example 5**

In ⊙J, $m\angle 3 = 5x$ and $m\angle 4 = 2x + 9$. Find the value of x.



$5x = 2x + 9$

$-2x \quad -2x$

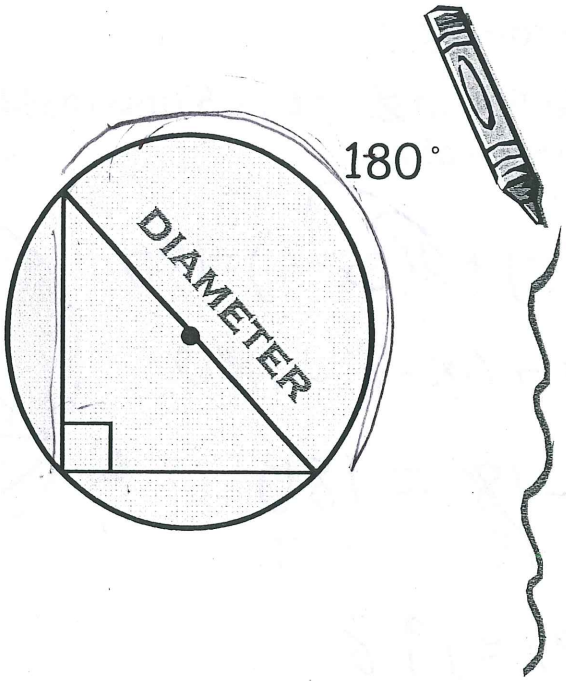
$3x = 9$

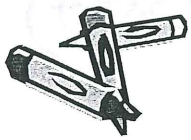
$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

(9)

If a right triangle is inscribed in a circle then the *hypotenuse* is the diameter of the circle.

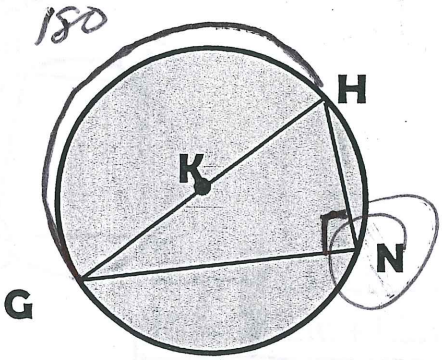




(10)

Example 6

In ⊙K, $\overline{GH}$ is a diameter and $m\measuredangle GNH = 4x - 14$. Find the value of x.



$4x - 14 = 90$

$+14 \quad +14$

$\frac{4x}{4} = \frac{104}{4}$

$x = 26$

(11)

Example 7

In ⊙K, $m\angle 1 = 6x - 5$ and $m\angle 2 = 3x - 4$. Find the value of x.

$2(6x-5) + 2(3x-4) = 180$

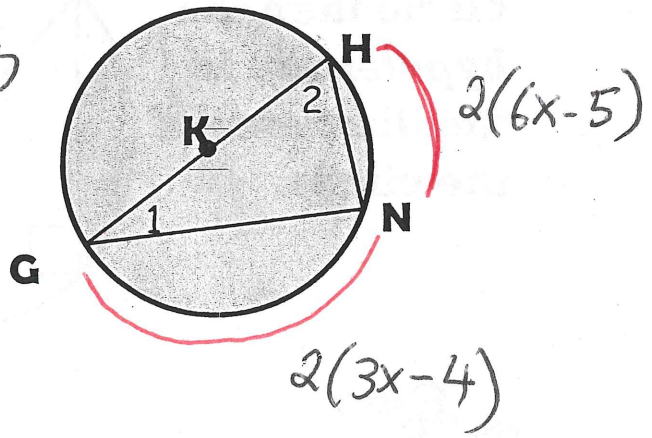
$12x - 10 + 6x - 8 = 180$

$18x - 18 = 180$

$+18 \quad +18$

$18x = 198$

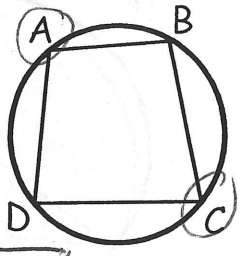
$x = 11$



(12)

A circle can be circumscribed around a quadrilateral if and only if its opposite angles are supplementary.

angles add to be 180°



$m\angle A + m\angle C = 180$

$m\angle B + m\angle D = 180$

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Example 8 Find y and z.

$z + 85 = 180$

$z = 95$

$y + 6 + 110 = 180$

$y + 116 = 180$

-116

$y = 64$